FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

2 to 8 March, 2014 (Week 10)

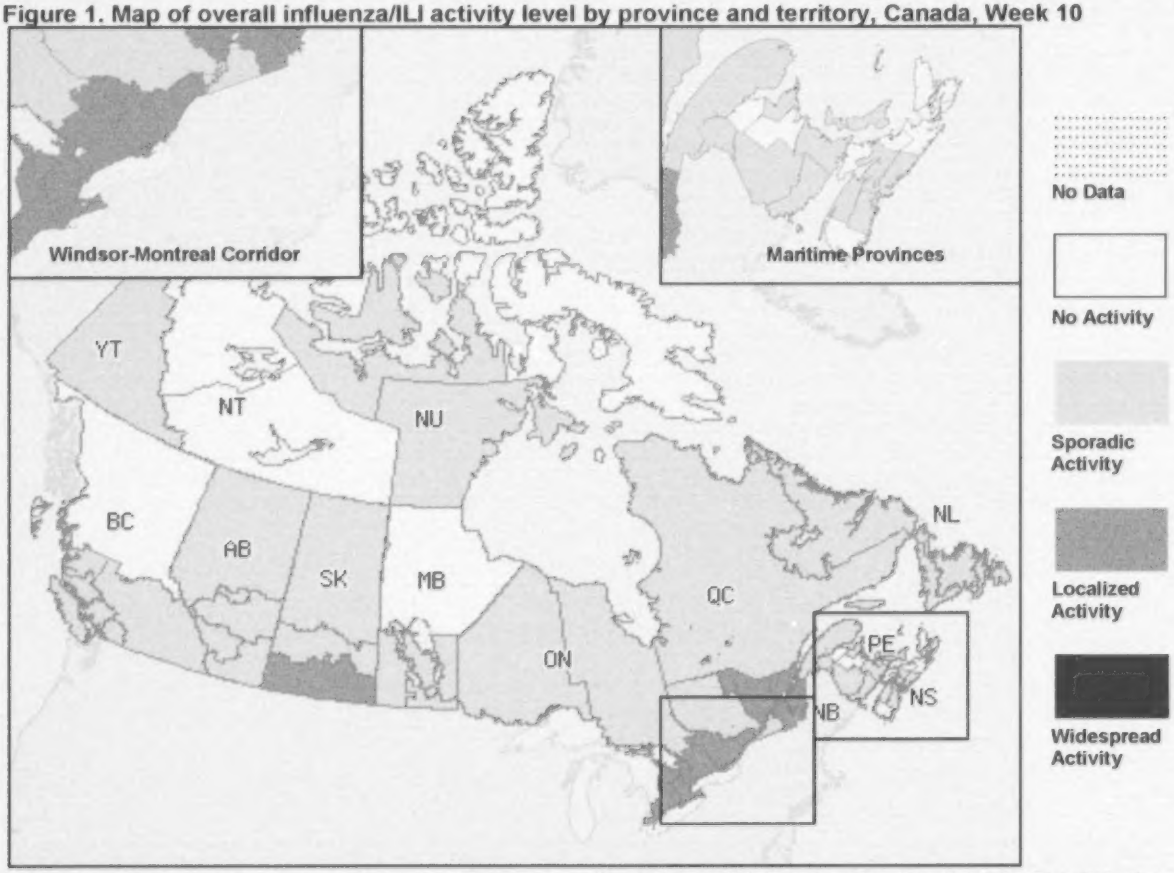
Overall Summary

- In week 10, influenza activity in Canada continues to decrease overall, and is consistent with activity at this time in past influenza seasons.
- The influenza A(H1N1) virus remains the most common influenza virus circulating this season. Circulation of influenza B virus continues to increase in recent weeks, resulting in increased paediatric and adult hospitalizations.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age, influenza B cases are having a greater impact on adults 65 year of age and older.
- As of week 10, 3,450 hospitalizations and 189 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.

Influenza/ILI Activity (geographic spread)

In week 10, influenza activity levels continued to decline. No region reported widespread activity and eight regions (SK(1), ON(5), and QC(2)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 10

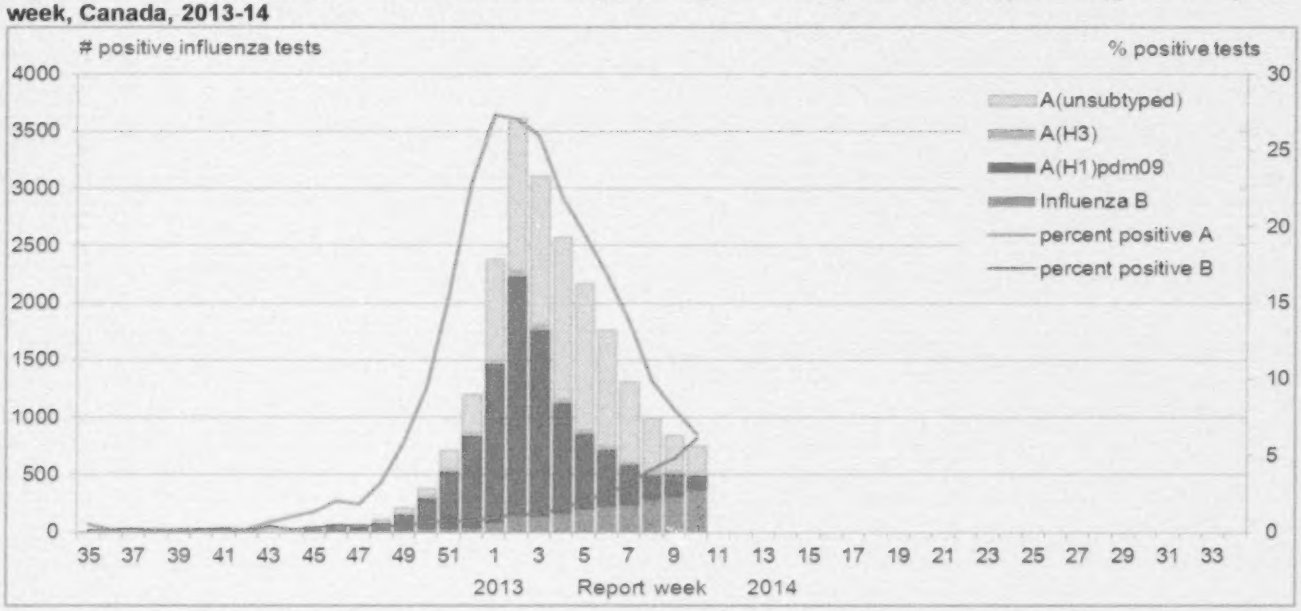


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests continued to decrease, from 842 in week 09 to 752 in week 10. The percentage of positive influenza tests was similar to last week at 12.5% (Figure 2). Cumulative influenza virus detections to date have been predominantly influenza A (89%), and among those subtyped, 97% (10,089/10,458) were A(H1N1)pdm09. The percentage of positive tests for influenza B has been rising slowly in recent weeks, and was approximately equal to detections of influenza A in week 10 (Table 1). Among the 18,182 cases for which information on age and type/subtype has been received this season, 55.4% were 20-64 years of age (Table 2).

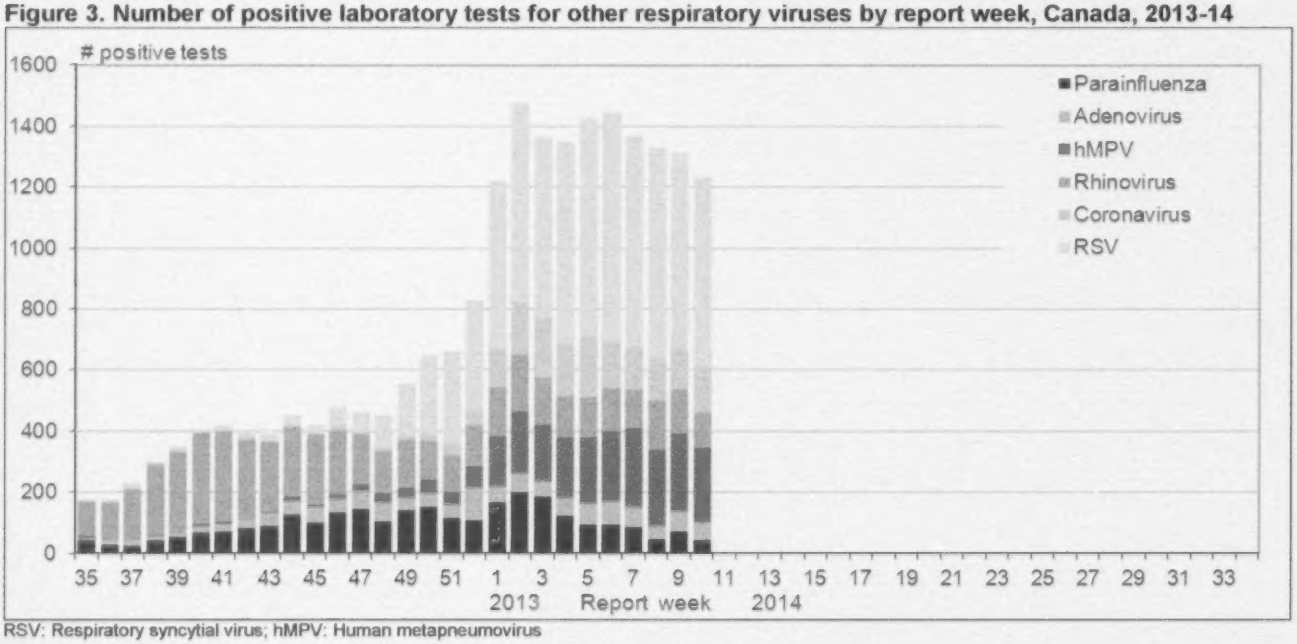
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV has been declining gradually over recent weeks. The number of positive tests for parainfluenza, adenovirus and rhinovirus decreased in week 10, but increased for coronavirus, interrupting a decline since week 05. The number of positive tests for human metapneumovirus has been higher than during the same period last season and declined slightly in week 10 (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (March 2 to 8, 2014)					Cumulative (August 25, 2013 to March 8, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	35	22	9	4	28	1734	1575	53	106	124
AB	63	31	1	31	17	3671	3360	49	262	122
SK	11	5	1	5	7	1343	967	5	371	34
MB	23	15	0	8	0	595	422	1	172	15
ON	82	33	9	40	128	5433	2386	253	2794	523
QC	130	14	0	116	179	5151	665	3	4483	1391
NB	25	4	0	21	6	1480	370	1	1109	18
NS	7	7	0	0	1	153	124	4	25	3
PE	1	1	0	0	1	117	116	0	1	1
NL	7	0	0	7	1	339	104	0	235	132
Canada	**384**	**132**	**20**	**232**	**368**	**20016**	**10089**	**369**	**9558**	**2363**
Percentage[2]	51.1%	34.4%	5.2%	60.4%	48.9%	89.4%	50.4%	1.8%	47.8%	10.6%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

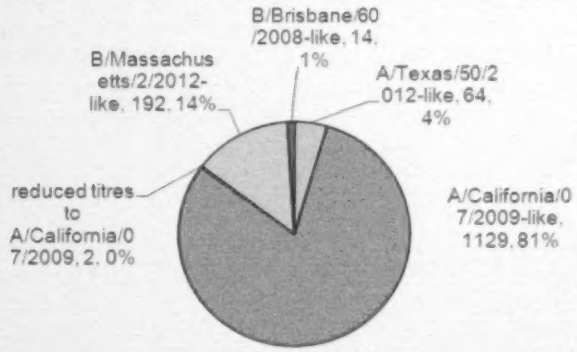
Age groups (years)	Weekly (March 2 to 8, 2014)					Cumulative (August 25, 2013 to March 8, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	44	10	0	34	22	3098	1377	24	1697	235	3333	18.3%
5-19	18	5	0	13	33	1268	676	18	574	355	1623	8.9%
20-44	52	21	1	30	18	4913	2680	36	2197	385	5298	29.1%
45-64	44	12	0	32	50	4269	2292	40	1937	507	4776	26.3%
65+	36	10	0	26	71	2337	949	96	1292	683	3020	16.6%
Unknown	0	0	0	0	0	130	100	17	13	2	132	0.7%
Total	194	58	1	135	194	16015	8074	231	7710	2167	18182	100.0%
Percentage[2]	50.0%	29.9%	0.5%	69.6%	50.0%	88.1%	50.4%	1.4%	48.1%	11.9%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1401 influenza viruses [64 A(H3N2), 1131 A(H1N1)pdm09 and 206 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Fourteen influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1401



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 996 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 993 viruses tested for resistance to zanamivir were sensitive. All 1165 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

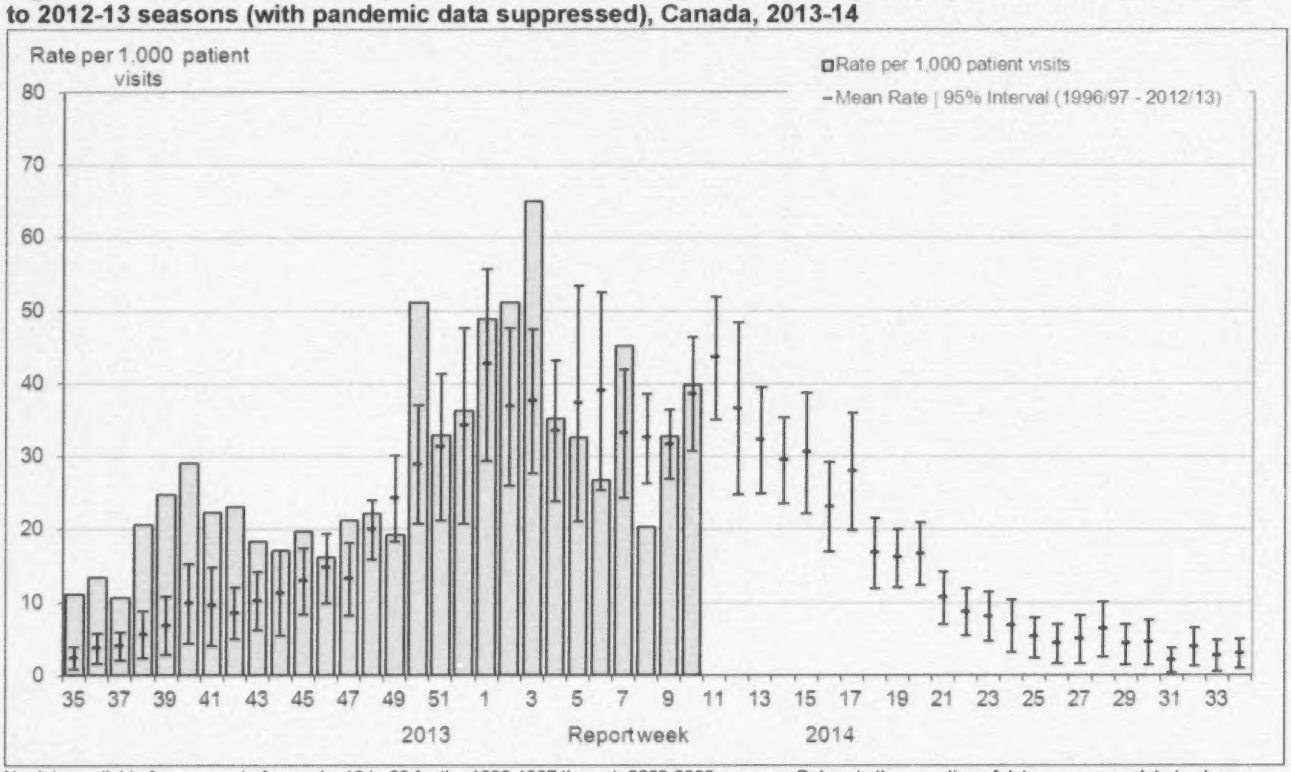
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	53	0	53	0	88	88 (100%)
A (H1N1)	833	2 (0.2%)	830	0	1077	1077 (100%)
B	110	0	110	0	NA[1]	NA[1]
TOTAL	996	2 (0.2%)	993	0	1165	1165 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 32.7/1,000 in week 09 to 39.8/1,000 in week 10; but is still within the expected range for this time of year (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

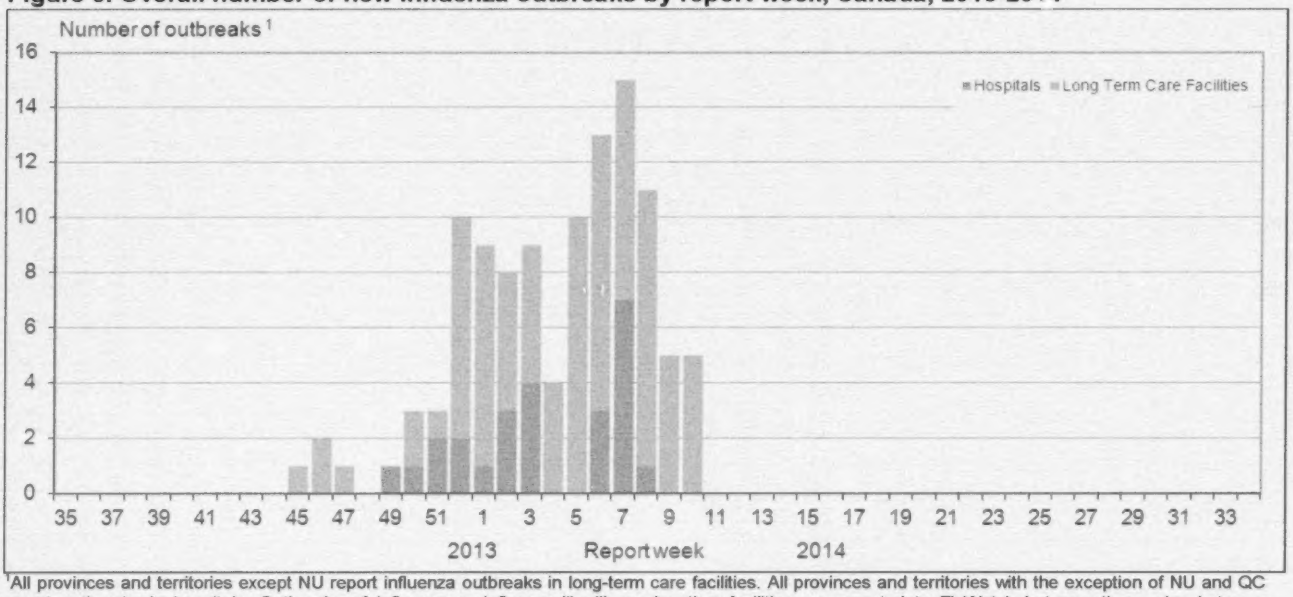


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 10, five new influenza outbreaks in long-term care facilities were reported, the same number as in week 09 (Figure 6). In addition, two outbreaks of influenza-like-illness were reported in schools.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

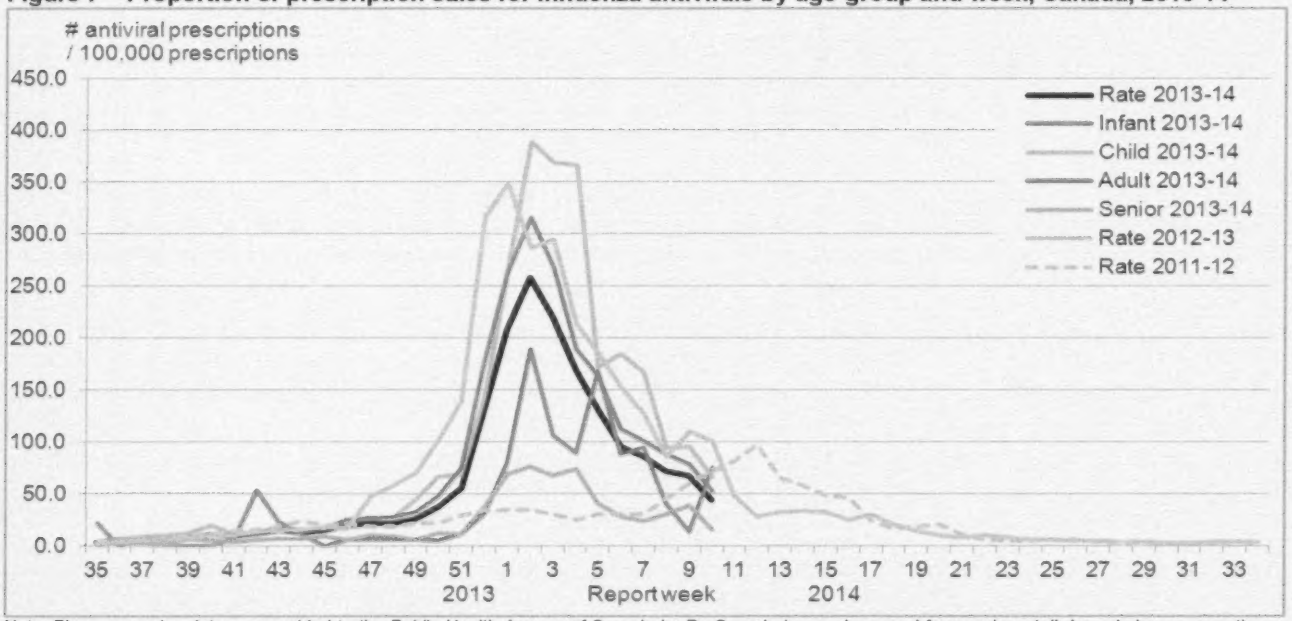


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 10, the overall proportion of prescriptions for influenza antivirals continued to decrease. The largest proportion of prescriptions for antivirals continuing to be among children 2-18 years of age and adults 19-64 years of age, although the proportion of prescriptions for infants increased in week 10 (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 10, 35 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 26 in week 09. In week 10, influenza A was reported in 23 cases and influenza B in 12 cases. A greater proportion of cases have been reported with influenza B cases in recent weeks, following the trend in laboratory detections (Figure 8a). Although the number of cases is small, a greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. In week 10, one ICU admission was reported in a child 5-9 years of age with influenza B. No deaths were reported in week 10.

To date this season, a total of 591 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 90% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Eighty-two ICU admissions have been reported, of which 55 (67%) were children <5 years of age (Figure 9a). All but four were cases with influenza A, and 96% of those subtyped were A(H1N1)pdm09. Among the 72 ICU cases with available data, 47 (65%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 10, 36 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 35 in week 09. In week 10, influenza B-associated hospitalizations surpassed those associated with influenza A for the first time this season. Among cases in week 10, 16 (44.4%) were influenza A, and 20 were influenza B (Figure 8b). All but five hospitalizations occurred among adults ≥45 years of age. No ICU admissions or deaths were reported in week 10.

To date this season, 1176 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1074 (91.3%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 201 hospitalizations, all but seven of which were cases with influenza A (110 A(H1N1)pdm09, five A(H3N2) and 79 A(unsubtyped)). More than three quarters of hospitalizations and approximately 80% of ICU admissions were ≥45 years of age. Of the 163 ICU admissions with available information, 143 (87.7%) were reported to have at least one comorbidity and of the 172 ICU admissions with available information 125 (72.7%) reported not having been vaccinated this season. Fifty-six deaths have been reported, all but three with influenza A (32 A(H1N1)pdm09, two A(H3N2) and 19 A(unsubtyped)); six cases 20-44 years of age, 27 cases 45-64 years of age and 23 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

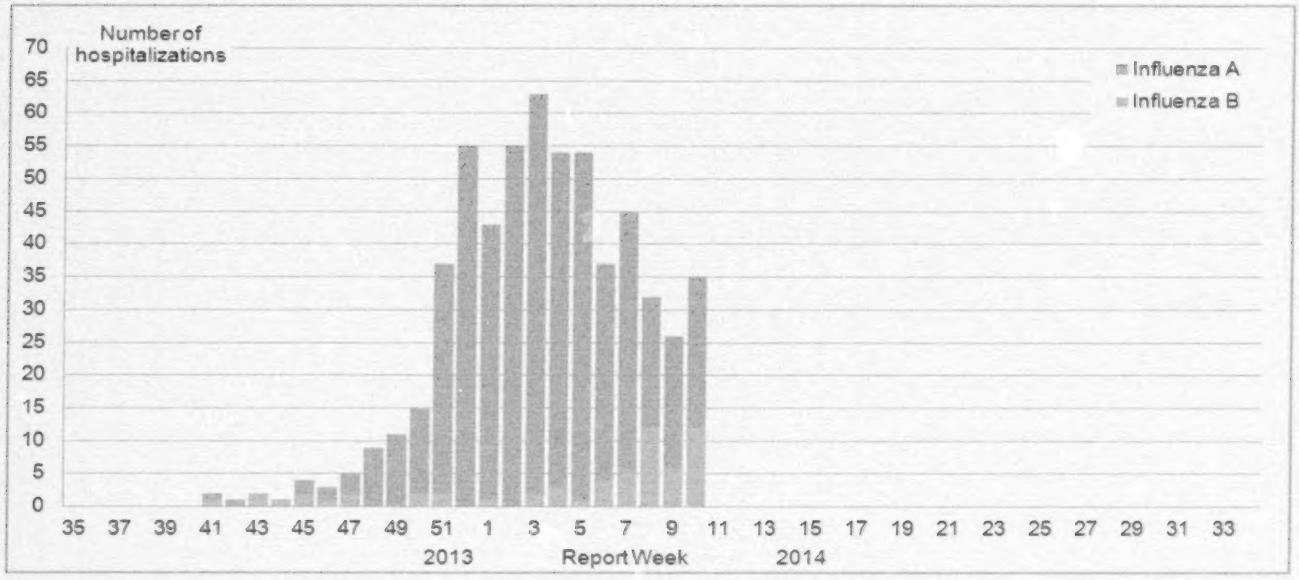
Age groups	Cumulative (25 Aug. 2013 to 8 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	101	30	0	71	3	104 (18%)
6-23m	153	44	1	108	7	160 (27%)
2-4y	156	51	3	102	18	174 (29%)
5-9y	80	23	0	57	27	107 (18%)
10-16y	40	15	1	24	6	46 (8%)
Total	530	163	5	362	61	591
% [1]	89.7%	30.8%	0.9%	68.3%	10.3%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

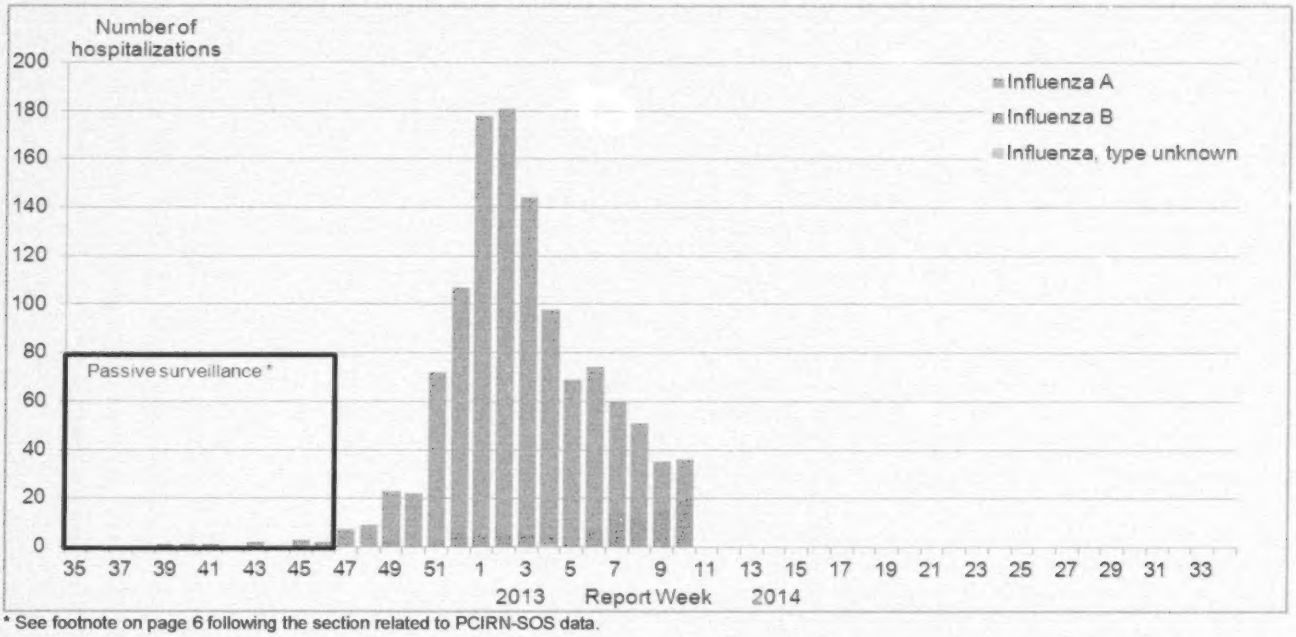
Age groups (years)	Cumulative (25 Aug. 2013 to 8 Mar. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	3	0	10	1	14 (1%)
20-44	234	126	4	104	6	240 (20%)
45-64	423	194	4	225	25	448 (38%)
65+	401	193	31	177	69	470 (40%)
Total	1071	516	39	516	101	1172
% [1]	91%	48%	4%	48%	9%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * One case for which the influenza type has not yet been reported, and three cases for which the age-group was not reported. are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



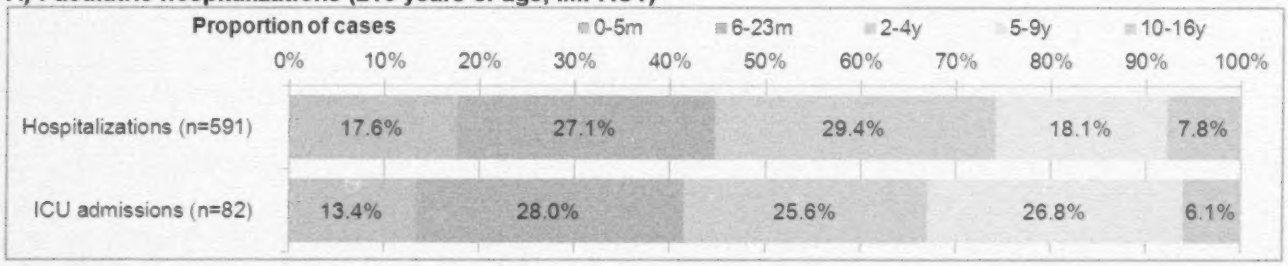
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



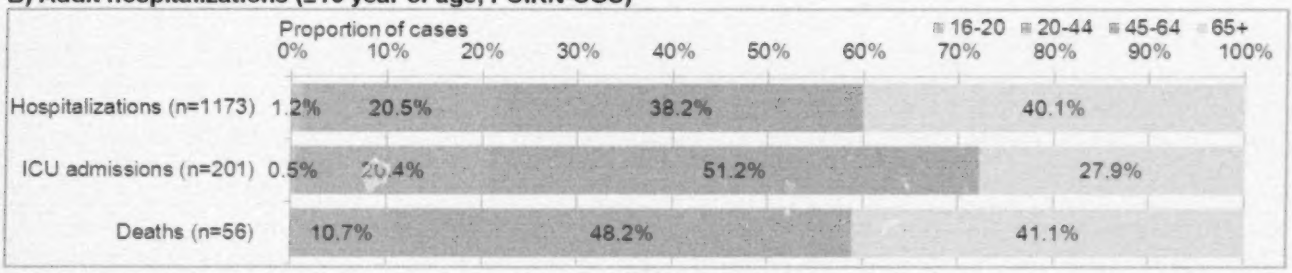
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 10, 194 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (136, 70.1%), of which 58 (42.6%) were A(H1N1)pdm09, 12 (8.8%) were A(H3N2), and 66 (48.5%) were A(unsubtyped). The proportion of cases with influenza B has been increasing in recent weeks. Five of the seven ICU admissions in week 10 included age information: four of which were adults ≥45 years of age; all but one with influenza A. Seven deaths were reported, four of which were adults 65 years of age and older. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 3,450 influenza-associated hospitalizations have been reported, 94.5% with influenza A. The majority (57.7%) of hospitalizations have been cases 45 years of age of older (Table 6). A total of 316 ICU admissions have been reported this season, of which 66.5% were among adults 20-64 years of age. A total of 189 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (50.3%), followed by adults ≥65 years of age (40.2%). Influenza B has been detected infrequently among severe cases of influenza to date this season: in only 5.5% of hospitalizations, 1.3% of ICU admissions, and 5.3 % of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 8 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	554	273	6	275	31	585 (17%)
5-14	121	62	5	54	26	147 (4%)
15-19	32	19	2	11	1	33 (1%)
20-44	571	404	4	163	11	582 (17%)
45-64	1038	667	20	351	40	1078 (31%)
65+	830	440	59	331	77	907 (26%)
Unknown	114	87	3	24	4	118 (3%)
Total	3260	1952	99	1209	190	3450
Percentage[1]	94.5%	59.9%	3.0%	37.1%	5.5%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Eight new cases, with one death, and four additional deaths in previously confirmed cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to March 13, 2014, the WHO has been informed of a total of 388 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 121 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Three new laboratory-confirmed cases of MERS-CoV, with one death, have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 189 laboratory-confirmed cases of infection with MERS-CoV, including 82 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.